



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

MITT ROMNEY
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Commissioner

APPROVAL FOR REMEDIAL USE

Pursuant to Title 5, 310 CMR 15.00

Name and Address of Applicant:

Smith & Loveless Inc.
14040 Santa Fe Trail Drive
Lenexa, KS 66215

Trade name of technology and model: Modular FAST (hereinafter called the "System"). A schematic drawing of a typical unit and a Technology checklist are attached and are a part of this Approval.

Transmittal Number: W 042189
Date of Issuance: June 4, 2004

Authority for Issuance

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental, Protection hereby issues this Approval for Remedial Use to: Smith & Loveless, Inc., 14040 Santa Fe Trail Drive, Lenexa, Kansas (hereinafter "the Company"), approving the System described herein for Remedial Use in the Commonwealth of Massachusetts. Sale and use of the System are conditioned on compliance by the Company and the System owner with the terms and conditions set forth below. Any noncompliance with the terms or conditions of this Approval constitutes a violation of 310 CMR 15.000.

Glenn Haas, Director
Division of Watershed Management
Department of Environmental Protection

Date

I. Purpose

1. The purpose of this approval is to allow use of the System in Massachusetts, on a Remedial Use basis.
2. With the necessary permits and approvals required by 310 CMR 15.000, this Approval for Remedial Use authorizes the use and installation of the System in Massachusetts.
3. The System may only be installed on facilities that meet the criteria of 310 CMR 15.284(2).
4. This Approval for Remedial Use authorizes the use of the System where the local approving authority finds that the System is for upgrade of a failed, failing or nonconforming system and the design flow for the facility is less than 10,000 gallons per day (GPD).

II. Design Standards

1. The System, a fixed film aeration treatment process, is an aerobic process in which the media is 100-percent submerged. In the submerged application, the aeration and mixing are provided by an airlift mechanism. A draft tube, in the center of the System, extends through the media. Air is pumped into the draft tube by a compressor; wastewater is pumped from below the media to the top of the submerged media. The pumped liquid impacts the splash plate, which directs the wastewater across the top of the submerged media. The splash plate also creates a break-up of the wastewater into droplets to increase the surface area of the liquid to enhance the aeration of the wastewater. The oxygenated wastewater then passes down, through the media, where the bacterial activity takes place. The System uses both fixed film and suspended bacteria in the degradation of the organic material.
2. The System is designed to allow the plastic or epoxy-coated steel modular inserts, the treatment unit with the media, to be installed in an appropriately sized precast or cast-in-place concrete tank. The inserts are constructed of PVC or high-density polyethylene plastic in modular units with the number of units and the tank size governed by the wastewater design flow and characteristics.
3. The System is designed with storage volume beneath the media to provide sludge storage of excess solids, which slough off the media. The sludge storage zone must be periodically pumped, based on sludge accumulation. Prior to or at the time the excess sludge is being removed, the air scour system should be activated to loosen and remove solids attached to the media. The removed solids will settle to the bottom of the tank and be removed with the sludge.

4. The System shall be installed between the septic tank and the distribution system of a standard Title 5 system constructed in accordance with 310 CMR 15.100 - 15.279, subject to the provisions of this Approval.
5. The System may be used in soils with a percolation rate of up to 90 minutes per inch (MPI). For soils with a percolation rate of 60 to 90 MPI, the effluent loading rate shall be 0.15 gpd / sq. ft.

III. Allowable Soil Absorption System Design

1. Reduction of the Required Soil Absorption System Size - An applicant is eligible for up to a 50 percent reduction in the area of the soil absorption system required by 310 CMR 15.242, where all of the following conditions are met. Accordingly, in approving design and installation of the System by a particular Applicant, the local approving authority may allow up to a 50 percent reduction in the area of the soil absorption system required by 319 CMR 15.242, provided that all of the following conditions are met:
 - A. No reduction in the required separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the stone underlying the SAS and the high groundwater elevation is allowed unless such a reduction is first approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
 - B. No reduction in the required four feet of naturally occurring pervious material is allowed unless the Applicant has demonstrated that the four foot requirement cannot be met anywhere on the site. Any such reduction must first be approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
 - C. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, the local approving authority may allow a reduction under a local upgrade approval in accordance with 310 CMR 15.405 (1) (a), (b), (f), (g), and (h).
 - D. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, even taking into account provisions for local upgrade approval as described above, then pursuant to 310 CMR 15.410, the applicant first must obtain variance(s) from the local approving authority and then approval of the Department.
2. Reduction of the Required Separation Distance to High Groundwater Elevation - An Applicant is eligible for a reduction in separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the stone underlying the SAS and the high groundwater elevation, where all of the following

conditions are met. Accordingly, in approving design and installation of the System by a particular Applicant, the local approving authority may allow a reduction in the required separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the stone underlying the SAS and the high groundwater elevation, provided that all of the following conditions are met:

- A. A minimum two foot separation (in soils with a recorded percolation rate of more than two minutes per inch) or a minimum three foot separation (in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the stone underlying the SAS and the high groundwater elevation is maintained.
- B. No reduction in the required SAS size is allowed unless such a reduction is first approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
- C. No reduction in the required four feet of naturally occurring pervious material is allowed unless the Applicant has demonstrated that the four foot requirement cannot be met anywhere on the site. Any such reduction must first be approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
- D. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, the local approving authority may allow a reduction under a local upgrade approval in accordance with 310 CMR 15.405 (1) (a), (b), (f), (g), and (h).
- E. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, even taking into account provisions for local upgrade approval as described above, then pursuant to 310 CMR 15.410, the applicant first must obtain variance(s) from the local approving authority and then approval of the Department.

3. **Reduction of the Requirement for Four Feet of Naturally Occurring Pervious Material** – An Applicant is eligible for a reduction in the required four feet of naturally occurring pervious material in an area of no less than two feet of naturally occurring pervious material, where all of the following conditions are met. Accordingly, in approving design and installation of the System by a particular Applicant, the local approving authority may allow a reduction in the required four feet of naturally occurring pervious material in an area with no less than two feet of naturally occurring pervious material, provided that all of the following conditions are met:

- A. The Applicant has demonstrated that the four foot requirement cannot be met anywhere on the site.

- B. No reduction in the required SAS size is allowed unless such a reduction is first approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
- C. No reduction in the required separation (four feet in soils with a recorded percolation rate of more than two minutes per inch or five feet in soils with a recorded percolation rate of two minutes or less per inch) between the bottom of the stone underlying the SAS and the high groundwater elevation is allowed unless such a reduction is first approved by the local approving authority and then approved by the Department pursuant to 310 CMR 15.284.
- D. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, the local approving authority may allow a reduction under a local upgrade approval in accordance with 310 CMR 15.405 (1) (a), (b), (f), (g), and (h).
- E. Where full compliance with all of the minimum set back distances in 310 CMR 15.211 is not feasible, even taking into account provisions for local upgrade approval as described above, then pursuant to 310 CMR 15.410, the applicant first must obtain variance(s) from the local approving authority and then approval of the Department.

IV. General Conditions

- 1. All provisions of 310 CMR 15.000 are applicable to the use of this System, the System owner and the Company, except those that specifically have been varied by the terms of this Approval.
- 2. Any required operation and maintenance, monitoring and testing shall be performed in accordance with a Department approved plan. Any required sample analysis shall be conducted by an independent U.S. EPA or DEP approved testing laboratory, or a DEP approved independent university laboratory. It shall be a violation of this Approval to falsify any data collected pursuant to an approved testing plan, to omit any required data or to fail to submit any report required by such plan.
- 3. The facility served by the System and the System itself shall be open to inspection and sampling by the Department and the local approving authority at all reasonable times.
- 4. In accordance with applicable law, the Department and the local approving authority may require the owner of the System to cease operation of the system and/or to take any other action as it deems necessary to protect public health, safety, welfare and the environment.
- 5. The Department has not determined that the performance of the System will provide a level of protection to public health and safety and the environment that is at least equivalent to that of a sewer system. No System shall be installed, upgraded or expanded, if it is feasible to connect the facility to a sanitary sewer, unless as allowed by 310 CMR

15.004. When a sanitary sewer connection becomes feasible, the facility served by the System shall be connected to the sewer, within 60 days of such feasibility, and the System shall be abandoned in compliance with 310 CMR 15.354, unless a later time is allowed, in writing, by the approving authority.

6. Design, installation and operation shall be in strict conformance with the Company's DEP approved plans and specifications, 310 CMR 15.000 and this Approval.
7. Pressure distribution designed in accordance with Department guidance is required for all installations of the System.

V. Conditions Applicable to the System Owner

1. The System is approved for the treatment and disposal of sanitary sewage only. Any wastes that are non-sanitary sewage generated or used at the facility served by the System shall not be introduced into the System and shall be lawfully disposed.
2. Effluent discharge concentrations shall meet or exceed secondary treatment standards of 30 mg/L biochemical oxygen demand (BOD₅) and 30 mg/L total suspended solids (TSS). The effluent pH shall not be less than 6.0 or more than 9.0.
3. All samples shall be taken at a flowing discharge point, i.e. distribution box, pipe entering a pump chamber or other Department approved location from the treatment unit. Any required influent sample shall be taken at a point that will provide a representative sample of the influent. Influent sampling locations shall be determined by the system designer, subject to written approval by the Department.
4. Operation and Maintenance Agreement:
 - A. Throughout its life, the owner shall operate and maintain the System in accordance with the Company and designer's operation and maintenance requirements and this Approval. To ensure proper operation and maintenance (O&M), the owner shall enter into an O&M agreement. No O&M agreement shall be for less than one year.
 - B. No System shall be used until an O&M agreement is submitted to the approving authority which:
 - a. Provides for the contracting of a person or firm trained by the Company as provided in Section VI (6) and competent in providing services consistent with the System's specifications, with the operation and maintenance requirements specified by the Company and the designer, and with any specified by the Department;

- b. Contains procedures for notification to the Department and the local board of health within five days of a System failure or alarm event and for corrective measures to be taken immediately;
 - c. Provides the name of an operator, which must be a Massachusetts certified operator if one is required by 257 CMR 2.00, that will operate and monitor the System. The operator must operate and visit the System, for the first year, at least every three months.
- 5. The System owner shall at all times have the System properly operated and maintained in accordance with this Approval, the designer's operation and maintenance requirements and the Company's approved procedures and sampling protocols. The System owner shall notify the Department and the local approving authority in writing within seven days of any cancellation, expiration or other change in the terms and/or conditions of their O&M agreement.
- 6. Prior to transferring any or all interest in the property served by the System, or any portion of the property, including any possessory interest, the owner of the System shall provide written notice of all conditions contained in this Approval to the transferee(s). Any and all instruments of transfer and any leases or rental agreements shall include as an exhibit attached thereto and made a part thereof a copy of this Approval for the System. The System owner shall send a copy of such written notification(s) to the Department and local approving authority within 10 days of such notice being given.
- 7. Effluent from the System serving a facility shall be monitored quarterly. At a minimum, the following parameters shall be monitored: pH, BOD₅, and TSS. After one year of monitoring and reporting and at the written request of the owner, the Department may reduce the monitoring and reporting requirements.
- 8. By January 31st of each year for the previous year, the System owner shall submit to the approving authority all data collected in accordance with item 7, above, and an O&M checklist and a technology checklist, completed by the System operator for each inspection performed during the previous calendar year. Copies of the checklists are attached to this approval.
- 9. Prior to the issuance of a Certificate of Compliance for the System, the System owner shall record and/or register in the appropriate Registry of Deeds and/or Land Registration Office, a Notice disclosing both the existence of the alternative septic system subject to this Approval on the property and the Department's approval of the System. If the property subject to the Notice is unregistered land, the Notice shall be marginally referenced on the owner's deed to the property. Within 30 days of recording and/or registering the Notice, the System owner shall submit the following to the Department and the local approving authority: (i) a certified Registry copy of the Notice bearing the book and page/instrument number and/or document number; and (ii) if the property is

unregistered land, a Registry copy of the owner's deed to the property, bearing the marginal reference.

10. Within fourteen days of the local approving authority's issuance of the Certificate of Compliance for the System, the owner shall submit a copy of the Certificate of Compliance to the Department.

VI. Conditions Applicable to the Company

1. By January 31st of each year, the Company shall submit a report to the Department, signed by a corporate officer, general partner or Company owner that contains information on the System, for the previous calendar year. The report shall state: the number of units of the System sold for use in Massachusetts including the installation date and date of start-up during the previous year; the address of each installed System, the owner's name and address, the type of use (e.g. residential, commercial, school, institutional) and the design flow; and for all Systems installed since the date of issuance of this Approval, all known failures, malfunctions, and corrective actions taken and the address of each such event.
2. The Company shall notify the Director of the Watershed Permitting Program at least 30 days in advance of the proposed transfer of ownership of the technology for which this Approval issued. Said notification shall include the name and address of the proposed new owner and a written agreement between the existing and proposed new owner containing a specific date for transfer of ownership, responsibility, coverage and liability between them. All provisions of this Approval applicable to the Company shall be applicable to successors and assigns of the Company, unless the Department determines otherwise.
3. The Company shall develop and update the following: minimum installation requirements; an operating manual, including information on substances that should not be discharged to the System; a maintenance checklist; and a recommended schedule for maintenance of the System essential to consistent successful performance of the installed Systems.
4. The Company shall develop and update as required a standard protocol essential for consistent and accurate measurement of performance of installed Systems, including procedures for sample collection and analysis of the System. The protocol shall be in accordance with the latest edition of Standard Methods for the Examination of Water and Wastewater.
5. The Company shall make available, in print and electronic format, the referenced procedures and protocol in paragraphs 3 and 4 directly above to owners, operators, designers and installers of the System.
6. The Company shall institute and maintain a program of operator training and continuing education, as approved by the Department. The Company shall update the list of qualified operators and make the list known to users of the technology.

7. The Company or its designee shall conduct an intended use review of the System prior to the sale of any nonresidential unit to ensure that the proposed use of the System is consistent with the unit's capabilities.
8. The Company shall furnish the Department any information that the Department requests regarding the System within 21 days of the receipt of that request.
9. The Company shall include copies of this Approval and the procedures and protocol described in Section VI (3) and (4) with each System that is sold. In any contract executed by the Company for distribution or re-sale of the System, the Company shall require the distributor or re-seller to provide each purchaser of the System with copies of this Approval and the procedures and protocol described in Section VI (3) and (4).

VII. Reporting

1. All notices and documents required to be submitted to the Department by this Approval shall be submitted to:
Director
Watershed Permitting Program
Department of Environmental Protection
One Winter Street - 6th floor
Boston, Massachusetts 02108

VIII. Rights of the Department

1. The Department may suspend, modify or revoke this Approval for cause, including, but not limited to, non-compliance with the terms of this Approval, non-payment of the annual compliance assurance fee, for obtaining the Approval by misrepresentation or failure to disclose fully all relevant facts or any change in or discovery of conditions that would constitute grounds for discontinuance of the Approval, or as necessary for the protection of public health, safety, welfare or the environment, and as authorized by applicable law. The Department reserves its rights to take any enforcement action authorized by law with respect to this Approval and/or the System against the owner, or operator of the System and/or the Company.